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Running head: WORK-ANXIETY-COPING-INTERVENTION RCT

Work-anxiety coping intervention improves work-coping perception while a recreational intervention leads to deterioration. Results from a randomized controlled trial

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Abstract

Work-anxieties are costly and need early intervention. The perception of being able to cope with work is a basic requirement for work ability. This randomized controlled trial investigates whether a cognitive behavioural, work-anxiety coping group intervention leads to better work-coping perception than an unspecific recreational group.

Heterogeneous people in medical rehabilitation, who were due to return to work, were interviewed concerning their work-anxieties, and either randomly assigned to a work-anxiety coping group (n=85) or a recreational group (n=95). The participants (with an average of 50 years old (range 23-64); 51% women; 70% workers or employees, 25% academics, 5% unskilled) followed the group intervention for four or six sessions. The perceived work-coping was assessed by self-rating (Inventory for Job-Coping and Return Intent*ion* JoCoRi) after each group session. Although participants had a slight temporary decrease in work-coping after group session two (from M_1=2.47 to M_2 =2.28, d_{Cohen}=-0.22), the work-anxiety coping group led to the improvement of perceived work-coping over the intervention course (from M_1=2.47 to M_6=2.65, d_{Cohen}=0.18). In contrast, participants from the recreational group reported lower work-coping after six group sessions (from M_1=2.26 to M_6=2.02, d_{Cohen}=-0.18).

It is considered that people with work-anxieties need training in work-coping. By focusing on recreation only, this may lead to deterioration of work-coping. Indeed, intervention designers should be aware of temporary deterioration (side-effects) when confronting participants with work-coping.

Key words

Work-anxiety; work-coping; return to work; intervention; mental health

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Work-anxieties are in need of interventions

Employees on long-term sick leave cause problems for the organization and get problems with their personal work history (Banerjee, Chatterji, & Lahiri, 2014; Greenberg et al., 1999). Often, a delayed return to work or even long-term sick leave is due to mental disorders. Therefore, specific work-anxieties can play an essential role (Linden & Muschalla, 2007; Muschalla, 2016b).

For employees with work-anxieties, interventions are necessary in order to avoid long-term sick leave. Even more than reducing work-anxieties, it is important to strengthen work-coping and work-ability. As part of a larger project (Muschalla, Linden, & Jöbges, 2016b; Muschalla, 2016a), we examined whether a specific work-coping group intervention leads to a positive development of work-coping in comparison to an unspecific recreational intervention. This is the first randomized controlled intervention study undertaken with a risk group for long-term sick leave (Muschalla & Linden, 2009; Smith, 2009), i.e. people with work-anxieties.

Going beyond the pre-post analysis, the present analysis focuses on the development of work-coping perception during the intervention of four or six group sessions. The development of work-coping during treatment is the novel aspect that has not been addressed in the previous papers (Muschalla et al., 2016b; Muschalla, 2016a). Knowing about work-coping over the intervention course is however essential for group trainers to understand the development of work-coping in interventions. It is also important for designing interventions: How many sessions are needed for improving work-coping? Are there critical phases within an intervention in which work-coping does not develop in a positive direction (which means potential side-effects need to be overcome)?

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In the following, I explain in detail why people with work-anxieties are a special risk group and in need of early interventions. I review the role of work-coping perception with respect to work-ability, and explain why work-coping has been chosen as the therapy rationale and measure over the intervention´s course.

What are work-anxieties?

Work-anxieties are anxieties which are directly related with the workplace, i.e. the anxiety provoking stimulus is the workplace or a work-related stimulus. The term "work-anxieties" (Muschalla, 2016b) is based on the internationally known concepts of psychopathology (Jaspers, 1913), differential diagnostics of anxiety disorders (APA, 2013; WHO, 1992), and consideration of typical anxiety provoking stimuli at work. Work-anxiety can be empirically distinguished from non- work-related anxiety disorders (Linden & Muschalla, 2007). People with work-anxiety feel anxious when confronted with the workplace or with work-related stimuli (colleagues, supervisors, work tasks), or when they are thinking of the workplace or going to work.

Phenomenologically, work-anxieties may present themselves as cognitive anxiety (worrying), or with physiological arousal, panic, and avoidance (Muschalla, 2016b). In the worst case, there is an overall panic-like reaction and avoidance behaviour towards the workplace. We call the latter "workplace phobia" (Haines, Williams, & Carson, 2002; Muschalla & Linden, 2009; Smith, 2009). According to the International Statistical Classification of Diseases and Related Health Problems (ICD-10, WHO, 1992), work-anxiety can be coded (Chapter V; F 41.8) as specific anxiety (work-anxiety of different phenotypes, e.g. social, or situational, or hypochondriac anxiety), or (F 40.8) as other specific phobia (workplace phobia).

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According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5, APA, 2013), work-anxiety can be coded as work-anxieties of different phenotypes (300.09) or as workplace phobia (300.29).

Work-anxieties are not only clinically relevant, but an important topic for work and organizational psychology: 30% of the general (working) population have a mental disorder of some kind (Wittchen et al., 2011). Of those with mental disorders, 60% suffer from work-anxiety (Linden & Muschalla, 2007). In a sample of working employees, who have not been treated for mental disorders, 5% were prone to go on sick leave due to work-phobic avoidance tendencies (Muschalla, Heldmann, & Fay, 2013). Work-anxieties have also been found among top executive managers and may influence important decision making (Mannor, Wowak, Bartkus, & Gomez-Mejia, 2015). Work-anxieties are thus a serious and specific topic for work and organizational psychology. They often occur with physiological symptoms (Payne, Fineman & Jackson, 1982) and long-term sick leave. Indeed, they can end up in unemployment or early retirement when undetected (Muschalla & Linden, 2009). Typical anxiety avoidance behaviour has been empirically observed, and in practice often presents itself as sick leave (Haines et al., 2002; Smith, 2009). Employees with work-anxiety are thus an important risk group in need of early intervention to prevent long-term problems (Nash-Wright, 2011).

Persons with work-anxieties are at risk of taking sick leave

Work-anxieties are in a special way related to sick leave: in work-anxieties the typical anxiety phenomenon of "avoidance" means "workplace-avoidance". This presents itself as sick leave. Work-anxiety and work-avoidance is thus of special

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importance for understanding long-term sick leave (Gjesdal, Ringdal, Haug, & Maeland, 2008; Soegaard, 2012; Nash-Wright, 2011; Verdonck-de Leeuw, van Bleek, Leemans, & de Bree, 2010). Long-term sick leave and a prolonged return to work after an illness are relevant problems for the professional history of the affected person, and also for the companies and society (Greenberg et al., 1999; Haschke, Hutter, & Baumeister, 2012; Seyedmehdi et al., 2013). Mental disorders lead in the sick leave statistics with 38–41 days of sick leave per case (Techniker Krankenkasse, 2012; WidO, 2011). The longer the sick leave duration, the higher is the risk for job loss or even ending up in early retirement (Brouwers, Terluin, Tiemens, & Verhaak, 2009; Muschalla & Linden, 2013). Work-anxiety characteristics have been described and validated empirically in several clinical and non-clinical settings, with different foci on the avoidance and sick leave consequences. For example, the phenomenon of work-anxiety was operationalized early in a sample of working men aged 30–60 years in the UK (Payne et al., 1995), following a situational and physiological operationalization, with 20 items covering anxiety-provoking situations and eight items covering anxiety responses and avoidance impulses, but not mentioning sick leave. Additionally, work-phobic anxiety has been validated by measuring increased physiological arousal in work-anxious people when they had to imagine approaching the workplace, and a decrease of arousal when leaving the workplace (Haines et al., 2002). Avoidance with sick leave due to work-anxiety was reported by 5% of a sample of presently healthy employees (Muschalla et al., 2013). Sick leave duration in workplace phobic people has been found to be much longer (24 weeks) than in people with common non-work related anxiety disorders (16 weeks) (Muschalla & Linden, 2009). The problem of long-term sick leave was also observed in a sample of

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African teachers (Smith, 2009).

When it comes to sick leave, specific and early interventions are necessary so that sick leave duration should be kept as short as possible (Nash-Wright, 2011). One central predictor for return to work is self-efficacy and thus an active work-coping attitude (Nigatu et al., 2017).

The meaning of work-coping in work-anxieties

Coping theory (Lazarus, 1993), which the investigated intervention here is based on, suggests two levels: the first level is appraisal, i.e. the perception the person has of the stimulus. The second level is "coping", i.e. the (expected) behavioural reactions towards the stimulus, or the tendency to approach or not. In the case of work-anxiety, the first appraisal when speaking of the workplace reveals anxiety and tension. The second level is work-coping: Can I get along with the conditions at work, with my work tasks, with my colleagues? Can I cope with these conditions even if I get symptoms of tension and anxiety?

This second level – work-coping perception - is very important for a return to work: studies on the return to work have found that the subjective self-efficacy or coping are important predictors for a successful return to work (Nigatu et al., 2017). Furthermore, sick leave is not explained by symptoms, but rather by work-coping capacities (Gatchel, Polatin, Mayer, & Garcy, 1994; Linden, Baron, & Muschalla, 2010).

Moreover, an earlier study (Muschalla & Linden, 2012) has shown that in people who are fit for work, six months after a period of sick leave, work-anxiety had increased (!) before the return to work. An explanation is that being confronted with work

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means being exposed to the feared stimulus, and thus anxiety increases. However, these employees were fit for work in the long run. It is not reduced work-anxiety which makes the person return to work, but there must be another, somewhat independent psychological mechanism, i.e. work-coping. Work-anxiety may increase when confronted with work, but people who can cope are fit for work some time later (Muschalla & Linden, 2012). Coping covers different forms of cognitive and acting behaviours, which can be modified (e.g. Clark and Beck, 2009; Lazarus, 1993; Nieuwenhuijsen et al., 2014; Taylor et al., 2016). Thus, work-coping is also expected to be changeable in people with work-anxiety and who have received training during an intervention. To focus on work-coping in interventions may be more helpful for people with work-anxiety than only focusing on work-anxiety reduction.

Intervention for work-anxiety is needed, but which one?

Interventions on anxiety can focus on different aspects: reducing anxiety by relaxation, by exposure, by improving coping with symptoms, or by carrying out activities. Cognitive behaviour therapy methods have been widely evaluated and were found effective for anxiety treatment (Bandelow et al., 2015; Kaczkurkin & Foa, 2015), and superior to relaxation.

As has been shown, for employees with work-anxiety, the reduction of work-anxiety symptoms was less relevant than training how to cope with work activities, despite perceiving anxiety symptoms.

Earlier work-related interventions focused on work-coping abilities such as self-efficacy, self-control, problem solving, or personal initiatives (Arends et al., 2012; Frese & Fay, 2001; Lazarus, 1993). Some intervention studies on skills and

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coping focused on a specific occupational group, i.e. healthcare professionals (Gardner, Rose, Mason, Tyler, & Cushway, 2005; Müller, Heiden, Herbig, Poppe, & Angerer, 2016). Other interventions targeted people with mental disorders (Nieuwenhuijsen et al., 2014; Arends et al., 2014), but none were conducted on people with specific work-anxieties. Reviews have reported that work-directed interventions in people with mental disorders have positive effects: they may lead to symptom reduction and positive occupational outcomes, such as reduced sick leave duration, a return to work or improved coping abilities (Joyce et al., 2016; Nieuwenhuijsen et al., 2014; Nigatu et al., 2016; van Vilsteren, van Oostrom, de Vet, Franche, Boot & Aneme, 2015). However, there are also findings that coping-oriented (e.g. problem-solving) interventions do not consistently show superior effects compared to usual treatments (Arends et al., 2012). Reviews point out the necessity for continuing work-related coping research in longitudinal designs (Monteiro, Pinto & Roberto, 2016), and intervention research with controlled comparisons (Arends et al., 2012; Nieuwenhuijsen et al., 2014; Nigatu et al., 2016).

Besides coping and self-efficacy skills, there have also been advances in resilience training for employees in different professions. Additionally, they have shown that psychosocial functioning and performance can be improved (Robertson, Cooper, Sarkar, & Curran, 2015). Resilience is a concept close to coping, and has been defined and operationalized in different ways. A common understanding of resilience is being able to withstand and recover from difficult conditions (Robertson et al., 2015). This ability, together with active coping behaviour, is what is needed at work.

In sum, the extant literature shows that interventions on resilience, work-

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directed self-efficacy and active coping may have positive effects on employees generally, and people with mental disorders specifically. From the findings and the previously mentioned knowledge on work-anxiety, I suggest that a work-directed intervention with a focus on active coping behaviour at work and an ability to withstand difficult situations may be useful for people with work-anxieties.

People with work-anxieties belong to a particular group of employees who are at risk for sick leave, and due to their specific work-related mental health problems have special needs for a work-coping intervention. Until recently, there have not been randomized controlled intervention studies which focus explicitly on people with work-anxieties, who are most at risk of taking long-term sick leave (Muschalla & Linden, 2009). Furthermore, the development of work-coping during an intervention has remained until now unclear. To know about the development of work-coping is however important for understanding how interventions function, and for getting an idea which development of work-coping may be expected from participants.

This present study is the first work-coping intervention for people with work-anxiety (Muschalla et al., 2016b; Muschalla, 2016a). Similar to anxiety treatment, interventions on work-anxiety may be twofold: on the one hand, work-coping strategies can be acquired through training, accompanied by stepwise exposure towards working. On the other hand, the employees´ capacities for relaxation can be strengthened in order to keep anxiety levels low and to overcome avoidance behaviour. Nevertheless, anxiety research shows that active anxiety coping leads to better results (Bandelow et al., 2015). However, until recently it was empirically unclear which strategy was better for improving work-coping in people with work-anxiety. Theoretically, one might expect that the work-coping intervention helps

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improve work-coping, as the employees are exposed to the work stimulus. According to anxiety-theory and empirical evidence (Hand & Wittchen, 1986), work-anxiety may also in the long-run decrease when the person is exposed to the anxiety-provoking stimulus (Muschalla & Linden, 2012). While exposed, s/he learns to cope with the feared work situation. Combined with the knowledge from work-interventions which show that active coping is useful, a work-anxiety coping intervention should combine aspects of exposure and active work-coping.

Research Question and Hypothesis

The aim of this present experimental study is the evaluation of a cognitive behavioral work-coping group intervention for a specific risk group of employees with work-anxiety, who come from various professional fields. Based on coping theory (Lazarus 1993) and evidence-based anxiety interventions and capacity training (e.g. Clark & Beck, 2009), a work-coping intervention for people with work-anxieties has been developed (Muschalla & Linden, 2013; Muschalla et al., 2016b; Muschalla, 2016a). As self-perceived work-coping seems to be more important for a return to work than the degree of work-anxiety (Muschalla & Linden, 2012), the question of this intervention study is in which way these two different intervention strategies will influence the development of work-coping perception during the short group intervention. Research on return to work interventions which focus on problem solving skills and coping show that more detailed analysis concerning skills development is required (Dewa, Loong, Bonato, & Joosen, 2015). This present study adds to this question. It is part of a larger intervention study with different research foci (Muschalla et al., 2016b; Muschalla, 2016a). Since it is possible that changes in

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work-coping may only occur over longer periods of intervention (Cape, Whittington, Buszewicz, Wallace, & Underwood, 2010), and since the development of work-coping is not clear until recently, an in-depth analysis of the perceived work-coping over the course of four or six sessions is the topic of this research paper.

This is the first randomized controlled evaluation of a manualised work-coping intervention for employees with work-anxieties. Based on the above reviewed theory and empirical knowledge (e.g. Arends et al., 2014; Lazarus, 1993; Muschalla & Linden, 2013; Nieuwenhuijsen et al., 2014; Taylor et al., 2016), work-coping in this intervention study covers both coping with work-anxiety symptoms and coping with work activities. According to the literature available and empirical findings, an intervention with a focus on work-coping should be more effective in improving work-coping perception than an intervention which does not contain any training for work-coping. Thus, a work-anxiety coping group and a recreational group (in which work is not a topic) are appropriate for comparison. Considering ethical aspects, none of the groups should in any way be harmful to the participants. This is why we chose a recreational approach for the non-coping group. Since the dose of intervention is of interest (i.e. how many sessions are needed to improve work-coping?), work-coping will be investigated over the course of the intervention.

Research hypothesis (H1): Employees with work-anxieties who participate in a cognitive behavioral work-anxiety coping group intervention develop a more positive view of their work-coping capacities over the intervention course than do participants from a recreational group.

Null hypothesis (H0): Employees with work-anxieties who participate in a work-anxiety coping group intervention do not develop a more positive view of their

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work-coping capacities over the intervention course, or that participants from a recreational group show a better outcome.

Since this research is part of a larger project, additional results on work-anxiety and sick leave during a six month follow-up have already been reported (Muschalla et al., 2016b). They show that employees with stand alone work-anxiety (without mental health comorbidity), who participated in the work-coping group, have a shorter average sick leave duration (11 weeks) than comparable persons who participated in the recreational group (16 weeks). The work-anxiety coping group therefore was more effective than the recreational group in slightly reducing work-anxiety from beginning to end treatment.

In addition to these results, this present analysis focuses on the new aspect of work-coping development over the intervention course (from group session one to group session four/six).

Methods

Setting and procedure

A cluster-randomized controlled trial was conducted in a German rehabilitation centre, where adult persons with somatic health problems are prepared for vocational reintegration after a period of illness (Muschalla et al., 2016b; Muschalla, 2016a). Rehabilitation treatment is on average three or four weeks off from the workplace. This gives the chance for intensively restoring health, or coping with health problems, e.g. heart, orthopaedic or neurological disorders. The setting was chosen because we find heterogeneous people here from the general working

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population from all kinds of professions and all age groups. Earlier studies showed that about 25-30% of people in somatic rehabilitation are affected by work-anxiety (Muschalla & Linden, 2013). This is an early intervention, because it is undertaken in parallel (and not after) medical treatment. We decided not to include a psychosomatic unit in order to avoid confounding effects due to psychotherapies (which are standard in psychosomatic but not in somatic rehabilitation). Thus the people in our intervention study did not get any other psychological group intervention during the study period. We chose the cluster-randomized design for excluding exchange effects which might occur when participants from the different intervention groups talk to each other, e.g. during lunch. The interventions groups were conducted over a three-monthly period.

People of the working age (18-64 years) who scored high in an initial screening on work-anxiety were then diagnosed using a structured DSM-based interview concerning work-anxiety (Work-Anxiety-Interview*,* Linden & Muschalla, 2007; Muschalla & Linden, 2009, see Instruments). This was carried out by a state-licensed psychotherapist. As is typical for structured diagnostic interviews, the diagnoses of the Work-Anxiety Interview are categorical, i.e. in this case, a number of symptom and impairment criteria for each diagnostic category are fulfilled, and the diagnosis can be stated. The inclusion criterion for participation in the intervention study was to fulfil the diagnostic and impairment criteria of at least one work-anxiety diagnosis out of eight possible diagnoses.

People fulfilling the criteria of one work-anxiety diagnosis were invited to participate in the intervention study. Participants were asked for work-coping self ratings after each group session (items from the JoCoRi; Muschalla, Fay, &

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Hoffmann, 2016a, see Instruments). These results on work-coping perception during the course of the short intervention are reported in this article. Due to organizational reasons, work-coping could not be assessed before the first group session.

Work ability outcomes over the longer period, including follow-ups, are reported in another paper. They show that for persons with stand alone work-anxiety without mental disorders, that work-anxiety coping intervention leads to reduced sick leave duration (Muschalla et al., 2016b).

Participants

1610 people were screened for work-anxiety during the rehabilitation routine (Muschalla et al., 2016b). Those who scored high in work-anxiety screening (n = 429) were investigated in detail with the structured Work-Anxiety Interview. 393 of those who were interviewed in detail fulfilled the criteria of at least one type of work-anxiety. Finally, 345 people of the working age 18-65 participated in the intervention study (51.6% women). From 180 participants, a work-coping perception could be obtained after each of the four group sessions. For 68 participants, the rehabilitation was prolonged and thus a work-coping perception was available for six group sessions. The participants´ characteristics are shown in Table 1. Participants were similar in both groups, i.e. randomization reached its aim of equal distribution among the groups. The only difference is that participants of the intervention group were slightly younger (48 years) than participants of the recreational group (51 years). Gender was equally distributed, with participants coming from different occupational fields (office work, physical work), of whom most (about 70%) had to deal with clients, while almost a third (about 30%) worked together with colleagues.

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This study was approved by the Ethics Committee of the University of Potsdam, Germany, and the internal review board of the German Federal Pension Fund, including the Department of Data Protection. All participants gave written informed consent. Data were collected from May 2012 till April 2014 (Muschalla et al., 2016b; Muschalla, 2016a).

Group interventions

A work-anxiety coping group (WAG) and a recreational group (RG) were compared (Muschalla et al., 2016b; Muschalla, 2016a). Both groups were slow-open: in each session, new participants could be admitted. There were no other psychological interventions in the routine rehabilitation programme. The group meetings took place twice a week. Both study groups were conducted by the same state licensed physician-psychotherapist, and were weekly supervised by a behaviour therapist with special expertise in work-anxieties. The group meetings of the two branches were conducted over a three-monthly period, due to cluster-randomization. This means people who were admitted in months 1-3 participated in the work-anxiety coping group, while those admitted in months 4-6 participated in the recreational group. The advantage of this randomisation design is that there cannot be communication between participants from the work-coping and recreational groups. Thus, confounding effects due to unintended information about "what the other group is doing" are impossible. Each group was introduced to the participants as a "stress management group" in their therapy schedules.

In the work-anxiety coping group classical cognitive behaviour interventions were carried out, i.e. situation and behaviour analysis, work exposure in sensu

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(simply by continuously speaking about work) and coping with work duties and work-anxiety, problem solving concerning work organization and conflicts at work. The recreational group was based on a saluto-oriented approach (Fava & Ruini, 2003) and focused on strengthening recreation and wellbeing by doing pleasant activities like cooking, painting, creative handicrafts, etc. Participants received on average four sessions with their respective group during their three weeks of rehabilitation. Some participants had a prolonged stay and could attend six sessions of group intervention.

Work-Anxiety Coping Group. The intervention group, the work-coping-group, is a manualised modular behaviour-oriented intervention (Muschalla et al., 2016b; Muschalla, 2016a). It has been conceptualised by experts for treatment of work-related anxieties and is based on evaluated approaches of anxiety therapy, and cognitive interventions (Clark & Beck, 2009; Koch, Geissner, & Hillert, 2007). Intervention contents are based on coping and capacities such as problem solving, personal initiative behaviour and stress-management capacities (D´ Zurilla & Goldfried, 1971; Frese & Fay, 2001; Kaluza, 2004; Lazarus, 1969). The topic of each group session is to develop and train individual behaviour and cognitive strategies to get along better with work-anxiety and with social and health-related conflicts and problems at the workplace. Thereby traditional concepts of coping are referred to. These are self-control, seeking social support, planful problem solving, and positive reappraisal of the work situation (Lazarus, 1969). Work-directed role plays are used for training interaction and conflict solving. Guided discovery and group feedbacks are used for correction of dysfunctional beliefs. Dysfunctional beliefs are ideas like one can only work if one is perfectly healthy and feeling happy, or the idea that the

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supervisor (instead of oneself) is responsible for initiating problem-solving. Exemplary typical work situations (e.g. negotiating or prioritizing work duties) are used for training. Thereby participants are taught to use coping strategies dependent on situational requirements (Cheng, Kogan, & Chio, 2012). In this, we focused on self-management and self-regulation (Gottschling, Hahn & Spinath, 2016).

Recreational Group. The control group focused on strengthening recreation and wellbeing (Fava & Ruini, 2003) by conducting recreational activities and relaxation. In this group, participants were offered creative activities like painting, cooking, playing games, or exercises on sensory enjoyment. The aim was explicitly not to speak about work and professional problems, but instead carrying out recreational activities and inducing pleasant feelings. Concentration on recreation and relaxation might lead to a more relaxed perception of life in general and thereby also a more relaxed view on work.

Instruments

Basic diagnostic of work-anxiety. Work-anxiety was assessed with a validated interview on specific work-anxieties (Work-Anxiety Interview; Linden & Muschalla, 2007; Muschalla & Linden, 2009, 2013). The Work-Anxiety Interview is adopted from and validated with the established DSM-based Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1994). The Work-Anxiety Interview covers different work-related anxiety qualities. Eight different diagnoses have been explored in each participant: posttraumatic stress reaction after a life-threatening event at work, adjustment disorder with anxiety after an unpleasant but

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not life-threatening event at work, situational anxiety concerning specific work tasks or places, anxiety of insufficiency, social anxiety towards (specific) colleagues or supervisors, hypochondriac anxiety, work-related worrying, and workplace phobia. Diagnoses are categorical, i.e. a participant either fulfils the diagnostic criteria of a diagnosis or not. Eight diagnoses can be fulfilled at maximum. No diagnosis is given in the case where a person is healthy or simply dissatisfied with work. To receive a work-anxiety diagnosis, the state of work-anxiety of the person had to be "clinically relevant", i.e. the person reported certain symptoms and impairment in fulfilling daily duties at work and/or relevant suffering at work due to anxiety. Symptoms, impairment and suffering are explored for each work-anxiety category. On average, positively screened people with work-anxiety get on average two diagnoses in the Work-Anxiety Interview. The interview has been validated in several studies with different anxiety questionnaires and psychopathological scales as measures for convergent and divergent validity (Muschalla & Linden, 2013). In this present project, $n = 83$ of the work-anxiety interviews were conducted with a trained co-rater. The inter-rater reliability was kappa = .78 (Muschalla et al., 2016b)**.**

Measuring work-coping over the intervention course. After each group session, participants were asked to give a short rating on their perceived work-coping perception on seven coping items (Cronbachs alpha .822) from an evaluated work-coping scale (JoCoRi; Muschalla et al., 2016a). The instruction above the short work-coping questionnaire was: "Please imagine being at your workplace right now. How could you do the following things?" This technic is called cognitive rehearsal and is used in cognitive behavioural interventions (e.g. Ignacio et al., 2016). It means an

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exposure in sensu, because the person is required to imagine being at the workplace. Each item is rated from: 0 = not able to do this to 4 = best coping ability for doing this. The work-coping items reflect the contents of the work-anxiety coping group. Items read as follows:

1. When I get nervous or stressed at work, I can calm myself down.
2. I can tolerate that I do not feel my best at work all the time.
3. When a conflict arises at work, I address it, or I help actively to solve the problem.
4. When I have problems with job assignments or work–procedures, I start searching for information or turn to the person in charge.
5. When I have too much work, I say to myself that I will manage this, and I begin with a first step.
6. I can work together with colleagues and supervisors, as well as with those whom I do not like personally.
7. When I am impaired at work due to health problems, I tell this my superior in a way that helps him understand the problem so that we can search for a solution together.

Statistical Analysis

We tested randomization by calculating t-tests or X^2-Test for comparing the work-anxiety coping group (WAG) and the recreational group (RG). Coping over the course was examined by analyses of variance with repeated measurement and interaction effects (group comparison over the period of the intervention). Analyses were conducted according to protocol: they included only participants from whom a

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work-coping perception was available for all group sessions.

Results

Figures 1a and 1b show the courses of the two groups over four or six group sessions. Over four sessions, there was a marginal significant differential development (interaction of repeated measurements and group effect: Pillai´s Trace V = .037, $F(3, 176) = 2.27$, p = .082, ω^2 = .037). There was also a statistically significant effect for repeated measurement (V = .067, $F(3, 176) = 4.21$, p = .007, ω^2 = .067).[1] We saw a temporary decrease of coping in the work-anxiety coping group after group session two. While participants in the work-anxiety coping group perceived their work-coping at M = 2.58 after the first group session, they dropped to M = 2.41 after session two (d_{Cohen} = 0.2). Meanwhile, the recreational groups remained stable from session one (M = 2.29) to session two (M = 2.31, d_{Cohen} = 0.02). The work-anxiety coping group participants then had an increase in work-coping perception from session two (M = 2.41) to session three (M = 2.65, d_{Cohen} = 0.27).

Regarding the participants with longer intervention (six group sessions), there was a differential development over the intervention course between the work-anxiety coping group (WAG) and the recreational group (RG). There was a marginally significant interaction effect of repeated measurements and group (V = .137, $F(5, 62)$ = 1.97, p = .096, ω^2 = 137).[2] While the WAG increased in work-coping perception

[1] Mauchly´s test indicated that the assumption of sphericity has been violated, χ^2 (5) = 92.94, p = .000, therefore multivariate tests are reported (ε = .73).
[2] Mauchly´s test indicated that the assumption of sphericity has been violated, χ^2 (14) = 123.41, p = .000, therefore multivariate tests are reported (ε = .54).

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from $M = 2.47$ ($SD = 0.91$) after session one to $M = 2.65$ ($SD = 1.07$) after session six ($d_{Cohen} = 0.18$), the RG deteriorated from $M = 2.26$ ($SD = 1.25$) after session one to $M = 2.02$ ($SD = 1.40$) after session six ($d_{Cohen} = -0.18$). Furthermore, we also saw a dip after therapy session two in the work-anxiety group, and the increase after session three, while the recreational group remained stable. In this analysis with the reduced sample ($n = 68$) there was no statistically significant effect for repeated measurement ($V = .065$, $F(5, 62) = 0.86$, $p = .511$, $\omega^2 = .065$).

In sum, the results of work-coping over the intervention course support the research hypothesis (H1): Persons with work-anxiety who participated in a work-anxiety coping group intervention had a positive development in their work-coping during the intervention course, in comparison to participants from a recreational group. The recreational group participants decreased in work-coping perception when intervention was prolonged (six sessions).

[insert figure 1a and 1b about here]

Discussion

The results show that work-coping perception developed differently over the course of several group sessions, dependent on what has been undertaken in the intervention. In order to improve work-coping perception and avoid deterioration of work-coping in work-anxiety people, we need to focus on work-coping, not on general pleasant activities and recreation. Furthermore, we need sufficient time to develop work-coping in the right direction. In this study, after six sessions of group

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intervention, a differential effect of work-coping perception was demonstrated.

The first result is that the work-anxiety coping group does not lead to a stronger increase in work-coping perception after only four group sessions in comparison to an unspecified recreational group. This may be due to the relative short intervention dose. Although there are hints that even very short interventions might lead to positive effects, work-anxiety persons appear to require more time for work-coping development, at least more than four sessions (Cape, Whittington, Buszewicz, Wallace, & Underwood, 2010).

Secondly, there was a temporary deterioration after group session two in the work-coping group. The reason therefore could be that the content of the group sessions (talking about work issues) may mean a problem sensitization for the participants.

This provokes irritation, and irritation may be a side effect of psychological interventions (Linden, 2013). Speaking about work problems and strategies to solve them may lead to a more differentiated cognitive involvement with the topic and a more critical perception of ones own work-coping abilities, while a person who has not been confronted with the work situation has no reason to change his work-coping perception. Methodologically speaking, this phenomenon may be an alpha-beta-gamma change phenomenon (Millsap & Hartog, 1988; Golembiewski, Billingsley, & Yaeger, 1976): this means that the anchor of the "intern scale" (subjective scale) of the person may have changed after the person has received new information about work problems and work-coping strategies. It may be that, in the beginning, the work-anxiety coping group participants thought they had acceptable work-coping, but after two sessions their quantitative anchors changed, requiring recalibation (beta-

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change). It might also be that in the first two group sessions they learned that "working together with colleagues" or "active problem solving" may mean qualitatively different or additional aspects (gamma-change), which they could not cope with yet. Therefore participants temporarily appeared stricter with their self-evaluation on work-coping.

The third important result is that participants from the recreational group tended to become worse in work-coping over the course of six group sessions. Participants from the recreational group were not given the possibility of experiencing work-coping during the intervention. Neither, did they receive any feedback, and were therefore left in uncertainty. There may be different psychological mechanisms behind the phenomenon of work-coping deterioration in the recreational group, and this should be further investigated. Not speaking about work may also lead to uncertainty for the participants of the recreational group. This may be an unpleasant side-effect (Linden, 2013) which is not solved after three or more group sessions (as the recreational group did not touch the topic of work).

The occurrence of side-effects in clinical and occupational behaviour-oriented interventions has been empirically observed (Graßmann & Schermuly, 2016; Linden, 2013). One of the side-effects participants from the recreational group reported was "My (work) topic has not been touched", whereas participants from the work-coping group rather found themselves exposed or forced to think about work problems (Muschalla et al., 2016b; Muschalla, 2016a). For people with work-anxiety, uncertainty concerning work can be very uncomfortable and be accompanied by negative effects and pessimistic perception, or with avoidance. We did not investigate avoidance tendencies during the group intervention, as this belongs to the questions

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for further research: Does an intervention focusing on recreational aspects only increase dysfunctional avoidance behaviour in work-anxiety persons? Up from what dose can such an intervention even cause harm in that it leads to dysfunctional development (i.e. loss of work-coping, increase of work-avoidance)?

In this present study, work-anxiety did not take a differential development in the work-anxiety coping and the recreational groups (Muschalla et al., 2016b). From a theoretical point of view, and also from clinical experience with many patients with work-anxiety (Muschalla & Linden, 2013), there is the possibility to increase anxiety when supporting non-confrontation with work. This can be explained by the psychological mechanism of negative reinforcement (Skinner, 1969). The relationships between developments of work-coping, work-anxiety and avoidance behaviour should be further investigated in longitudinal research (i.e. over longer periods of time).

In sum, our results support the research hypothesis (H1) and show that work-anxiety problems should be approached in a work-oriented way - and not with recreation only. It may even lead to a dysfunctional development when work-related exposure and work-coping are not targeted, and interventions focus on recreation only. This is in line with suggestions that work-related anxiety problems need work-exposure (Noordik, van der Klink, Klingen, Nieuwenhuijsen, & van Dijk, 2010).

Contribution to theory and practice

First, the novel concept of work-anxiety itself contributes to theory and practice in organizational psychology, and has been evaluated over the past ten years (Muschalla, 2016b). Due to its consequences (sick leave), work-anxiety is highly

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relevant for work and organisational psychology. Different from burnout or stress, work-anxieties are defined by concrete core symptoms, so that subtypes can be phenomenologically distinguished, e.g. situational anxiety, social anxiety and others (Linden & Muschalla, 2007). Different from other psychological concepts (e.g. demand-control model, burnout), the work-anxiety concept is a descriptive phenomenological concept, and does not contain etiological assumptions. Work-anxieties can develop in very different ways, analogous to the possible development of common anxiety disorders: anxiety may be a trait of a person, or acquired (Muschalla & Linden, 2013; Muschalla, 2016b). Based on the psychopathological descriptive approach, the concept of work-anxiety goes beyond earlier work-anxiety concepts which described work-anxiety more narrowly on a physiological level (Payne et al., 1981; Haines et al., 2002) or rather specifically context-related (e.g. computer fear, Beutel et al., 2004; or performance anxiety in musicians, Fehm & Schmidt, 2006). The present concept of work-anxiety covers cognitive, affective and physiological aspects of work-anxiety and offers a differential diagnosis. Therefore it can be applied in any work setting for research and occupational health diagnostic purposes. The work-anxiety concept improves diagnostic accuracy which makes more concrete interventions possible (work-anxiety intervention instead of general anxiety intervention). The work-anxiety concept is thus useful for occupational physicians or occupational psychologists. Also supervisors at work may profit from understanding the concept. Although they should not diagnose psychopathological conditions in their co-workers, they may gain a better understanding of what might be the problem in a “problematic employee”, who tends to avoid certain work situations or is often on sick leave. The supervisor may - instead of another early intervention -

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suggest these employees visit the occupational physician for a general health check. When a supervisor recognises that a co-worker has a phobic anxiety towards a special work task, different individual options might be discussed: for example, changing the work task for the employee, or offering training for coping with this special task. Thus, the problem can be managed before the employee drops out on sick leave.

Secondly, the work-anxiety coping intervention investigated here contributes to the theory and practice in that for the first time evaluated anxiety and coping intervention methods are applied to the specific phenomenon of work-anxiety. From this study, we have learned that heterogeneous people from different professional levels who suffer from work-anxiety can be trained together in a group using the core topic of work-coping. Group leaders should be aware that after session two there might be a temporary decrease of work-coping perception. Therefore, group leaders should have an eye for such participants in order to attenuate side-effects, e.g. by offering hope it is possible that problems and challenges can be overcome.

Strengths and limitations

This study was conducted in a naturalistic setting with high ecological validity. Until recently, ecologically valid studies of coping have had rather weak internal validity because they were not based on interventions; the experimental design of the present study can be therefore seen as a contribution by itself. Another strength is that the diagnoses were carried out in face-to-face interviews with structured interviews and by a state-licensed clinician. The intervention was supervised regularly live to ensure the group leader´s adherence to protocol (Muschalla et al., 2016b; Muschalla, 2016a).

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A limitation of the study is that work-coping was assessed by self-rating, i.e. the coping perception of the person. Thus, future studies might integrate observable outcomes, such as situational tests for solving work problems in order to describe the coping behaviour from different perspectives. Nevertheless, subjective aspects of coping and expectations are an important prerequisite for the return to work and work ability (e.g. de Vries et al., 2015; Sampere et al., 2015). Thus, the participants´ perception of his/her own work-coping is essential.

Another limitation is that work-coping over the intervention course could not be assessed blindly. Like the work-anxiety coping participants, people from the recreational group also filled in the work-coping scale (JoCoRi) after each group session and therefore also had a glance at some contents which have been elaborated in the work-anxiety coping group. However, participants from the recreational group had no work-coping training. They perceived the contents of their recreational group as recreational activities, according to therapeutic intention (for manipulation check data, see Muschalla et al., 2016b). As work-coping was not assessed before the first group session, we do not have information about the baseline level of work-coping perception, and whether work-coping after session one was higher or lower than before the intervention. However, the relatively higher work-coping perception in the intervention group is relatively stable over the course (after sessions 1, 3, 4, 5, 6), and several general baseline characteristics were similar in the two groups (Table 1). This provides a hint that the two groups are comparable.

The work-coping outcome showed small changes during the intervention course (effect size $d_{Cohen} = 0.18$). In other studies, e.g. resilience training, effect sizes ranged between 0.01 and 1.54 for mental health and wellbeing outcomes, and 0.00

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and 0.97 for performance outcomes (Robertson et al., 2015). A study on a cognitive therapy in work-related stress with female staff working in an intellectual disability service found effect sizes of 0.65 (behavioral condition) or 0.81 (cognitive condition) (Gardner et al., 2005). This training covered three half-day workshops of 3.5 hours duration each. The relatively small effect size of the present study on a work-anxiety coping intervention may be due to the short duration of the intervention (four or at maximum six sessions of 90 minutes each), or the simple fact that work-anxiety is a severe problem and not easy to resolve within three weeks (as was the time frame of this study). The study can therefore also be understood as a feasibility study. It shows that supervisors cannot expect their employees to come back completely restored after a short medical rehabilitation intervention. Thus, ongoing interventions at work, or work adjustment seem the appropriate next step, i.e. mainly preventive action in order to avoid long term sick leave before it is required (Nash-Wright, 2011).

Future research

For about 30% of the participants (i.e. people with stand-alone work-anxiety, and without additional common mental disorders) the work-anxiety coping intervention led to reduced sick leave duration, six months after the intervention (Muschalla et al., 2016b). Future studies applying the work-coping intervention concept should consider booster sessions for refreshing work-coping.

The group concept should now be further evaluated in other settings, e.g. as a training intervention in occupational health prevention for risk employees.

Future research in the organizational domain should consider how to prevent work-anxiety and associated problems (sick leave, lost work ability) directly at work

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(Joosen et al., 2015). Thereby, the person-job fit (French, 1973) and adequate work (task) characteristics should also be taken into consideration (Semmer et al., 2015). As many workplaces nowadays are organized into team work, the person-job fit idea may be extended to a concept of team-capacity fit. This may be used additionally to overcome work-anxiety: For example, a doctoral student with phobic anxiety anticipating his first talk at a conference could be accompanied by a peer colleague who is good at speaking in public (but afraid of writing). The peer colleague functions as a backup to answer critical questions which come from the audience after the talk. In exchange, the talk-phobic doctoral student helps the colleague with his paper. In this way, both of them are exposed to their individual work-anxiety situations, while receiving peer support from each other. Hence, they are actively coping, and yet not avoiding the situation.

To solve person-job fit questions, occupational psychology counseling and/or psychosomatic counseling service at the workplace may be implemented (e.g. Rothermund et al., 2016) and provide useful evaluation. Thereby, a further research question is whether qualitatively different coping-problems for different aspects of work may trigger anxiety and avoidance for employees (Muschalla, 2016b). And another related question is, which individual work adjustments, i.e. individual work designs (Parker, Morgeson & Johns, 2017), may help employees with chronic work-coping problems so that they remain fit for work.

Lastly, potential new sources of work-anxiety, e.g. uncertainty due to information overkill and increased need for decision making, should be investigated, while early interventions for psychological coping with these new work-conditions will be needed.

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Conclusions

People with work-anxiety are at risk of taking long-term sick leave and need early intervention. This experimental intervention study investigated for the first time the development of work-coping perception in a work-anxiety coping group and a recreational group.

Results suggest that work-anxiety requires a specific work-oriented intervention for strengthening work-coping. Employers and occupational physicians should be aware of (and act against) the possible deterioration of work-coping in case only recreation is focused on during the work-absence.

As this study focuses primarily on work-coping (instead of work-anxiety symptom reduction), the evaluated group intervention here can be undertaken as capacity training (rather than psychotherapy) and can be done in or outside the workplace. There may be a temporary decrease in perceived work-coping after session two, and participants leaving at this point might experience harmful side-effects (e.g. irritation, reduced work-coping perception). Therefore intervention designers should be aware that more than two sessions are necessary in order to help persons with work-anxiety.

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Table 1. Participants´ characteristics

	Work-Anxiety-Coping-Group (WAG) n = 85	Recreational Group (RG) n = 95	T-Test or X^2-Test for group comparison (WAG/RG) *p*
Age	48.20 (9.6)	51.40 (7.3)	.015
Gender female	50%	51.6%	.834
Clinical indications			
Neurology	79.3%	71.6%	.296
Cardiology	13.4%	24.2%	.069
Orthopaedy	7.3%	4.2%	.372
Professional qualification			.385
Unskilled workers	6.1%	5.3%	
Blue collar workers	19.5%	30.5%	
White collar employees	52.4%	44.2%	
Employees with leading position	13.4%	14.7%	
High qualified academic employees	1.2%	1.1%	
Self-employed academics	3.7%	4.2%	
Self-employed entrepreneurs	3.7%	0%	
Type of work			.595
Mainly physical work	34.1%	36.8%	
Mainly office work	45.1%	37.9%	
Both	20.7%	25.2%	
Colleagues			.674
Working together with colleagues	56.1%	49.5%	
Working alone	23.2%	27.4%	
Both	20.7%	23.2%	
Contacts with clients or other thirds nearly every work day	75.6%	68.4%	.289
Sick leave duration within 12 months before rehabilitation	7.07 (14.8)	9.70 (16.7)	.253
Number of work-anxiety diagnoses in the *Work-Anxiety Interview* (maximum of possible diagnosis: 8)	1.56 (1.02)	1.87 (1.29)	.073
Attribution of health problems to the work (0 = work had no influence on health, 100 = health problem is completely due to work)	43.4 (28.4)	46.2 (30.7)	.540

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Figure 1a, 1b. Differential work-coping perception of participants in work-anxiety coping group and recreational group over four (six) group sessions. GLM Analysis of variance with repeated measurement. Mauchly´s Test indicated that the assumption of sphericity had been violated, therefore multivariate tests are reported: 1a (1b): Effects for repeated measurements: Pillai´s Trace $V = .067$, $p = .007$ ($V = .065$, $p = .511$). Effects of interaction of repeated measurements*group: $V = .037$, $p = .082$ ($V = .137$, $p = .096$).

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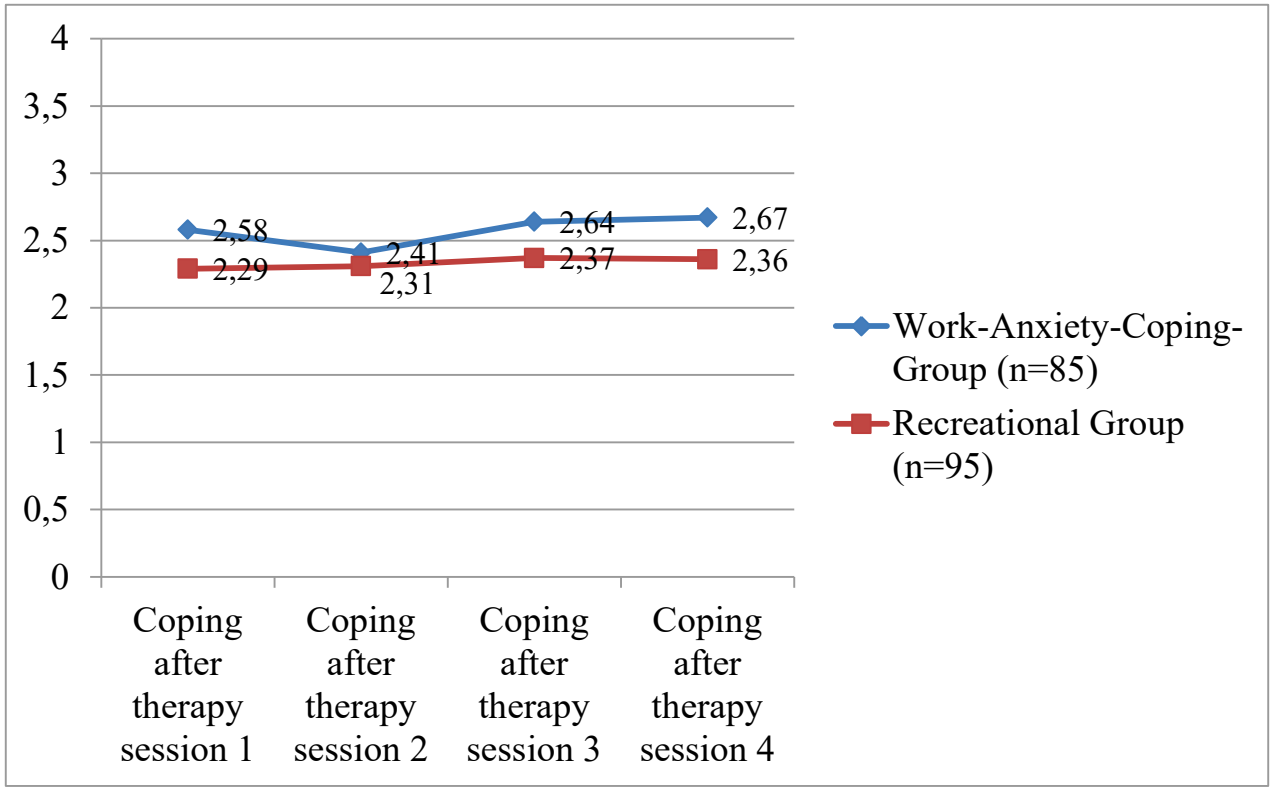

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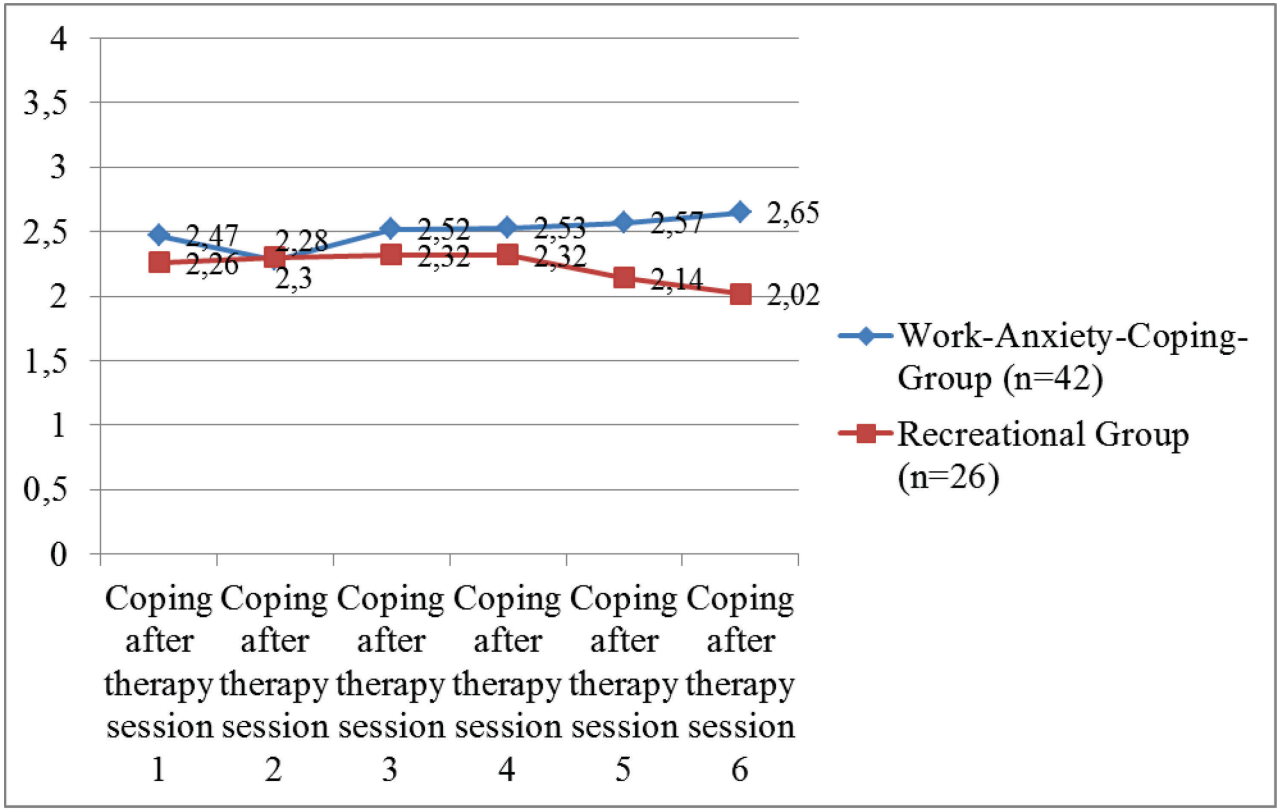

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